

51  
SPLIT

DART AEROSPACE LTD	Work Order:	21829A
Description: Float Assembly	Part Number:	D3218-041
Dwg: D3218 Rev. A D3218-041 replaces Helitech P/N: 358-008-001	Qty:	6 <del>12</del> Page 1 of 1

Step	Location	Procedure	By	Date	Qty
1	DC	Issue Traveler	CH	04.11.02	12
2	PG	Order bags in multiples of 3 Issue P/O: <u>2007076</u> Supplier: Tulmar Safety Systems D3218-041 Float Assembly per Dwg D3218 Serial No.: BXXXXX-01, BXXXXX-02, etc. <b>Copy of inspection paperwork is required with each Float Assembly</b>		4/04/11.03	12
3	RG	Receive and Inspect for transit damage <b>Ensure inspection paperwork is provided with each Float Assembly</b>	CH	05/01/05	6
4	QC5	Review vendor paperwork for completeness - Ensure all pressure tests passed - Ensure all dimensions within tolerance - Ensure Dart inspection performed - Ensure s/n printed on bag matches paperwork/Dart W/O Visually inspect bag for defects - No de-lamination or puckering of seams - Girt attachment OK - No holes through stitching - No excess glue - Valves installed in proper locations	AB	05/01/06	6
5	ST	Re-package and Stock in Kwik Float cell	CH	05/01/12	6
6	AC	Cost / part <u>2277.16</u>	CH	05-01-13	6
7	DC	Close W/O <u>2276.62</u> Inspect Level 21	CH	05.01.14	6

Rev	Date	Change	Revised By	Approved
A	03.11.14	New issue	KJ/DS	<del>CH</del>

RELEASED

03.11.19 ~~CH~~

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

NOTE: Date & initial all entries QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

**DART**

DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D3218	REV. A SHEET 1 OF 2
DATE 03.10.06		TITLE FLOAT ASSEMBLY	SCALE NTS
A	03.10.06	NEW ISSUE	

**RELEASED**03.12.05 *[Signature]***D3218-041 FLOAT ASSEMBLY, NOTES:**

## 1) MATERIAL:

ITEM	DESCRIPTION	QTY
FABRIC	POLYURETHANE COATED, PENNEL 987-123 YELLOW	7.20 m
ADHESIVE	SEALREZ S-0345 A/B	2.50 L
WEBBING	LAGRAN #3003, 1" WHITE NYLON	0.31 m
THREAD	NYLON, TWISTED TYPE II, SIZE F, CLASS A, V-T-295, COLOR TAN, CSB 92, COLOR #53	5.00 yds
NYLON CORD	MIL-C-5040 TYPE III, COLOR NATURAL	1.60 m
LETTERING	COATES SCREEN C99 S170 BLACK, HIGH GLOSS	0.50 oz
INFLATION VALVE	MIRADA B-51016 / A-51265	2
PRESSURE RELIEF VALVE	MIRADA B-51019	2
TOPPING VALVE	MIRADA B-51209	2
FLANGE	MIRADA B-51014-N (4.25")	4
FLANGE	HALKEY ROBERTS 981001020 (3.5")	2

## 2) AFTER MANUFACTURE:

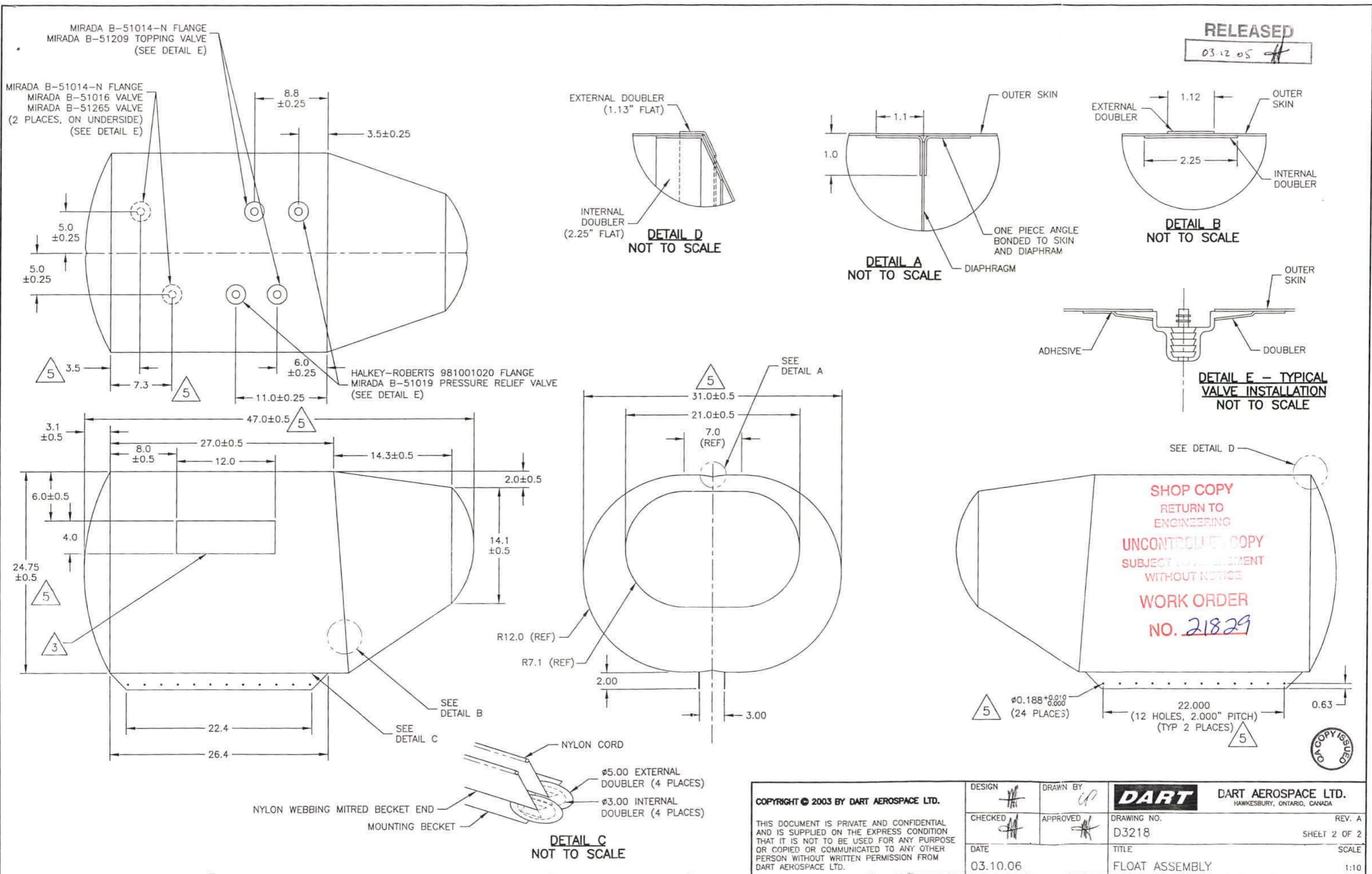
- (a) PRESSURE TEST EACH CHAMBER TO 4.36 PSI (30 kPa) FOR 5 MINS.
- (b) INFLATE TO RELIEF VALVE PRESSURE [MIN OF 3.00 PSI (20.6 kPa)].  
RELIEF VALVE MUST OPEN AT 3.3-3.5 PSI AND MUST CLOSE AT NOT LESS THAN 3.00 PSI. BAG MUST MAINTAIN A MIN PRESSURE OF 1.6 PSI (11.0 kPa) FOR 24 HOURS.

## 3) FLOAT IDENTIFICATION LETTERING 0.313" (7.95mm) HIGH BLACK CAPITAL LETTERS STENCILED ON THE R/H SIDE OF THE FLOAT BAG AS FOLLOWS:

**DART AEROSPACE LTD.**  
**FLOAT ASSEMBLY**  
 P/N D3218-041      S/N BXXXXXX-XX  
 REPLACES HELITECH P/N 358-008-001

- 4) COATED SIDE OF FABRIC ON OUTSIDE OF BAG.
- 5) ALL DIMENSIONS ARE IN INCHES. CRITICAL DIMENSIONS (DENOTED BY  $\triangle$ ) MUST BE OBTAINED AT 2 PSI.
- 6) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.

**SHOP COPY****RETURN TO****ENGINEERING****UNCONTROLLED COPY****SUBJECT TO AMENDMENT  
WITHOUT NOTICE****WORK ORDER****NO. 21829**





## Job Costing Report

Dart Aerospace Ltd.  
HawkesburyNov 02, 2004  
02:36 pm

Work Order No : 0021829  
 Project Name : D3218-041  
 Project For : WK451  
 Work Order Type : Main  
 Main WO Number :  
 House Part Number : D3218-041  
 Description : Float Assembly  
 Manufactured : Yes  
 Amount Req'd : 12  
 Amount Done : 0  
 Start Date : 11-02-04  
 Est Finish Date : 12-10-04  
 Act Finish Date :  
 Drawings Reqd : No  
 Ok for Approval :  
 Approval Rec'd : \$0 Posted to Finished Goods

Department Code:  
 Burden Flags : NNNNNNN  
 WO Status : Open  
 Invoice State : Not Invoiced  
 Invoice Date :  
 Invoice Number :  
 Invoice Amount : 0.00

Order Entry No :  
 OE Value : 0.00

Est Margin : 0.000%  
 Actual Margin : 0.000%

	Estimated	Actual	Var. %	Posted	To Post
Material Cost :	0.00	0.00	0.00	0.00	0.00
Engineering Hours :	0.00	0.00	0.00		
Engineering Cost :	0.00	0.00	0.00	0.00	0.00
Production Hours :	0.00	0.00	0.00		
Production Cost :	0.00	0.00	0.00	0.00	0.00
Packaging Hours :	0.00	0.00	0.00		
Packaging Cost :	0.00	0.00	0.00	0.00	0.00
OverHead Hours :	0.00	0.00	0.00		
OverHead Cost :	0.00	0.00	0.00	0.00	0.00
CNC Hours :	0.00	0.00	0.00		
CNC :	0.00	0.00	0.00	0.00	0.00
Misc. Hours :	0.00	0.00	0.00		
Misc. :	0.00	0.00	0.00	0.00	0.00
<hr/>					
Burden :	0.00	0.00	0.00		
<hr/>					
Total Cost :	0.00	0.00	0.00		
Margin :	0.000	0.000			
Selling Cost :	0.00	0.00			

	Estimated	Actual
Labour Hrs/Amount Done :	0.00	0.00
Profits/ (Loss) :	0.00	0.00

# PACKING SLIP

# TULMAR

**Tulmar Safety Systems Inc.**

1123 Cameron Street  
Hawkesbury, ON K6A 2B8 CA  
Tel: 613-632-1282  
Fax: 613-632-2030  
[www.tulmar.com](http://www.tulmar.com)  
email: info@tulmar.com

# COPY

**Packing Slip No****18056****Ship Date**

31-Dec-04

Bill No:

**Dart Aerospace**  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7. Canada

Ship To:

**Dart Aerospace**  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7. Canada

Order number	Sales order date	Account number	Account manager
14700	5-Nov-04	CDART100	Barney Bangs
PO number		Ship Via	PPD/COL
2007076		Pick-Up	
Item No.	Quantity ordered	UOM	Qty Shipped/Returned
Description			Quantity on back order

8927

Float Assembly, individual bag/P/N: D3218-041

12 EA

J  
CLOS/01105

6

Drawing No: D3218

P/N: BHA/RDA/358-11-01,Rev NR

P/N .D3218-041

Revision A

Must use Sealrez S-0345A/B adhesive.

S/N: B21829-01 to -12

<b>Lot No:</b>	B21829-00000001	Qty:	<b>Lot No:</b>	B21829-00000002	Qty:	<b>Lot No:</b>	B21829-00000003	Qty:
	1			1			1	
<b>Lot No:</b>	B21829-00000004	Qty:	<b>Lot No:</b>	B21829-00000005	Qty:	<b>Lot No:</b>	B21829-00000006	Qty:
	1			1			1	

RELEASE NOTE: R92-10158



TULMAR

## Release Note

**TULMAR SAFETY SYSTEMS INC.**  
1123 Cameron Street,  
Hawkesbury, Ont. Canada K6A 2B8  
Tel: (613)632-1282  
Fax: (613)632-2030

Revision 05/08/01 Form 458

R/N No. R92-10158

R92-10158

Date: 12/31/2004

12/31/2004

**Sold To:**

**Shipped To:**

DART AEROSPACE LTD

1270 Aberdeen Street

Hawkesbury, ON K6A 1K7

I hereby certify that the items listed hereon have been inspected, tested, and conform to all specifications and requirements detailed in the contract or purchase order.

*Deliberte*

12/31/2004

Authorized Inspector

Date

# Sales Order Acknowledgement

# TULMAR

Tulmar Safety Systems Inc.  
1123 Cameron Street  
Hawkesbury, ON K6A 2B8 CA

Tel: 613-632-1282  
Fax: 613-632-2030

Order No 14700 Order Date 5-Nov-04  
Customer Purchase Order 2007076  
Page 1

Contact:

## Bill To

Dart Aerospace  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
CA

## Ship To

Dart Aerospace  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
CA

### Dear Customer,

This document acknowledges receipt of your order. Please review the information presented here and advise us of any errors you notice or disagreements you have at your earliest convenience. For fastest service, write or call us at the address and phone number printed above. Please refer to our Order Number and your P.O. Number in all correspondence.

Customer	Payment Terms	PPD/COL	Shipping Instructions		
CDART100	Net 30 Days Pick-Up		FOB HAWKESBURY		
Item No	Ship Date	Quantity	UOM	Unit Price	Extended Price
8927 Float Assembly, individual bag P/N: D3218-041 P/N .D3218-041 Revision A Must use Sealrez S-0345A/B adhesive.	11-Dec-04	12	EA	<u>- 6</u> Dec. 31/04 S/N: 21829 - 01 6 - 02 - 03 - 04 - 05 - 06	
				Dec. 23/04 (Jan. 10 <sup>th</sup> )	

5/01 B018-041-01 TO -12  
addl Nov. 23-04 SBL

3664

Sales amount:  
Sales tax:  
Total

#8  
MAR

## Product Inspection Form # 193-8927(Tube &amp; Final)

Rev. D Sheet 1/1

Description: Float Bag Assembly

Items are Manufactured IAW Process Control Specification No. 001, 002, 003, 004, 005, 006, and are to be 100% inspected I.A.W. P.C.P. 001

W/O: 3663 TSS P/N: 8927 Qty.: 1 Customer P/N: D3218-041 Dwg. No.: D3218 Rev.: A Date: Nov. 16/04

Cutting IAW PCS 003		Marking IAW PCS 004		Bonding IAW PCS 002		Silkscreen	
Operator No.	Date	Operator No.	Date	Operator No.	Date	Operator No.	Date
85	Nov. 30/04	73	Dec 01/04			73	Dec 15/04
				( Documented below )		73	Nov. 15/04

Note: PCS 006, there shall be a total of 2 samples submitted for the Testing of the Adhesive (Peel and Shear Test), at start and end of every production day, record on sheet 3/3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
1- a) a) Attach Panel A (uneven edge) to larger edge of Panel B, centered on a 2" inner tape (butt joint) $\pm \frac{1}{8}$ "	37 Nov. 16/04		1	-	-	1	TS	Nov. 16/04
b) Attach (6) Valve Flanges on Panel A: 2-Relief, 2-Inlet & 2- Topping Up	37 Nov. 15/04		3	-	-	6	TS 11	Nov. 16/04
c) Attach (6) Doublers on above <del>Flanges</del>	37 Nov. 16/04	Bonding	6	-	-	6	TS	Nov. 16/04
2- a) Attach Panel C to Straight <del>edge of</del> Panel A, centered on a 2" inner Tape (butt joint) $\pm \frac{1}{8}$ "	37 Nov. 16/04	7104 25	1	-	-	1	TS	Nov. 16/04
3- a) Att. Panel D to Panel B (shorter edge) with 2" inner Tape	37 Nov. 16/04		1	-	-	1	TS	Nov. 16/04
4- a) Baffle Ass'y. with 2" Tape $\pm \frac{1}{8}$ "	37 Nov. 16/04	7104 25	1	-	-	1	TS	Nov. 16/04
5- a) Attach Baffle Ass'y. to Bag ( in 3 stages, minimum )	37 Nov. 17/04	Bonding	1	-	-	1	TS	Nov. 17/04
- a) Perform Baffle Test on Chamber # 1 after a 3 day Cure Time	12 Nov. 23/04	Testing (see sheet 2)	1	-	-	1	TS	Nov. 23/04
- a) Closure of 1" Main Seam (overlap) $\pm \frac{1}{8}$ "	37 Nov. 23/04	7104 25	1	-	-	1	TS	Nov. 23/04
b) Attach ID Patch (ref. CAR 04-003) 1/7 16 dec 04	37 Nov. 23/04	Bonding	1	-	-	1	TS	Nov. 23/04
- a) Perform Baffle Test on Chamber # 2 after a 3 day Cure Time	12 Nov. 29/04	Testing (see sheet 2)	1	-	-	1	TS	Nov. 29/04
- a) Attach 1" wide Finishing Tape on all Butt Joints & Main Seam, Centered $\pm \frac{1}{8}$ "	37 Nov. 30/04	7104 25	1	-	-	1	TS	Nov. 30/04
b) Att. Inspected Girt Ass'y. (Form 193-8927, Girt) to Bag	37 Nov. 30/04	Bonding	1	-	-	1	TS	Nov. 30/04
c) Attach 5" split patch on each end ( x 4 )	37 Nov. 30/04		1	-	-	1	TS	Nov. 30/04

FELMAR #8

## Product Inspection Form # 193-8927(Tube &amp; Final)

Rev. D Sheet 2 of 3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
10- a) Final Test b) Inspector to Stamp on ID Patch: Serial No.: B <b>21829-01</b> & Inspection Stamp beside the S/N	12 Dec 3/04	Testing (see sheet 3)	1	—	—	1	4	Dec 3 2004
	12 dec 3/04		1	—	—	1	4	Dec 23 2004

Upon completion of the (final) leakage test, the ID Patch shall be stamped with 5/16" high lettering and black ink: serial number (7 digits), provided by DART (refer to W.O.) \* Verify the integrity of the Valves &amp; O-rings/gaskets.

**Test Conditions** – All tests shall be performed in the following conditions:a) Atmospheric pressure between 28 to 32 inches of mercury (94.8 kPa to 108.4 kPa) b) Temperature shall be  $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$  c) Relative humidity shall be 80 % or less**Baffle Test:**

Over Pressure: Using socket tool and torque wrench s/n 0801300327, tight all (3) Valves to 40 inch pound, the JIC adaptor s/n 44537 between 15 to 20 foot pounds. Block the Relief valve with flagged pin. Inflate Chamber to 4.36 PSI (30 kPa) with clean dry air source. Using leak detector or non detergent soap, check all the valves and seams to detect leakage. Leakage shall be cause for rejection (soap during testing period). Fuzz is not considered a failure. After 5 minutes, there shall be no evidence of distortion or damage to the seams.

Inflation Test: Lower Chamber to 3.00 psi, re-adjust after 45 minutes. After 1 hour, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period. The corrected pressure reading shall not be less than 2.94PSI in order for the test to be acceptable

- 0.054 PSI for each  $1^{\circ}\text{C}$  of temperature increase
- + 0.054 PSI for each  $1^{\circ}\text{C}$  of temperature decrease
- + 0.049 PSI for each 0.1 inch of barometric increase
- 0.049 PSI for each 0.1 inch of barometric decrease

Chambers	Pressure	5 Min. Over P & Soap Test	45 Minute Stabilizing Period				1 Hour Test						19 %		
			Pass / Fail	Design Pressure	Time On	Time Off	Design Pressure	Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.		
# 1 (see note 1)	4.36 PSI	Pass	Pass	3.00 PSI	8:40	9:25	3.00 PSI	9:25	10:25	3.05 PSI	21°	21°	-0.02	2.99 PSI	Pass
Re-Test															
# 2 (Main Seam)	4.36 PSI	Pass	Pass	3.00 PSI	7:50	8:40	3.00 PSI	9:10	10:10	3.49 PSI	22°	22°	-0.004	2.98 PSI	Pass
Re-Test															

Note 1: Chamber # 1 requires Dart Aerospace Approval Signature: *John Brown* Date: *12/11/04*  
 Observations: *OK*

**Final Test: Leakage / Relief Valves:** The chambers are to be tested separately (one at a time). Through the Topping Up Valve, inflate chamber to approximately 2.00 PSI, soap the (3) valves to detect leakage. Then slowly inflate chamber until pressure relief valve vents. Use leak detector or non detergent soap to detect the opening and the closing. A hissing sound may also denote that the valve has started to open. Record the opening/closing time and pressure. The opening pressure shall be between 3.3 – 3.5 PSI and the closing pressure shall not be less than 3.00 PSI, in order for the test to be acceptable. After 24 hours, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period (see sheet 2). The corrected pressure reading shall not be less than 1.60 PSI in order for the Test to be acceptable.

Upon completion of the Final Test, inflate both chambers equally to approx. 2.00 PSI and perform Dimensional Verification below. Perform additional inspection of the tapes and girt assembly.

Pressure Relief Valve Test	PRV Serial Numbers	Opening		Closing		Pass / Fail
		Time ON	Pressure	Time	Close	
Chamber # 1	32846	9:45	3.42 PSI	9:50	3.18 PSI	Pass
Chamber # 2 (Main Seam)	32863	12:10	3.50 PSI	12:15	3.36 PSI	Pass

Chambers	Design (closing) Pressure as per above	24 Hour Leakage Test							17 % <i>leaky</i>	Pass / Fail
		Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g		
# 1	3.18 PSI	9:50	9:50	2.34 PSI	22° 23°	29.24 29.78	+0.054 -0.264	2.65 PSI	Pass	Pass
Re-Test										
# 2 (Main Seam)	3.36 PSI	12:15	12:15	2.10 PSI	23° 23°	29.78 29.58	-0.098	2.00 PSI	Pass	Pass
Re-Test										

Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail
3.5	+ 0.100 *	3.5	Pass	47.0	+ 0.5	47	Pass	24.75	+ 0.5	25.14	Pass
7.3	+ 0.100 *	7.25	Pass					31.0	+ 0.5	31	Pass

\* = IAW QSI 018, rev. A dated 03-05-29

### Submission of Adhesive Testing:

	Subm. Date / am-pm	Pass/Fail						
Peel	24 hour	Nov 16/04	Pass	Nov 17/04	Pass	Nov 17/04	Pass	Nov 18/04
	7 day	Nov 16/04	Pass	Nov 17/04	Pass	Nov 17/04	Pass	Nov 18/04
Shear	24 hour	Nov 16/04	Pass	Nov 17/04	Pass	Nov 17/04	Pass	Nov 18/04
	7 day	Nov 16/04	Pass	Nov 17/04	Pass	Nov 17/04	Pass	Nov 18/04

**Final Test:** Leakage / Relief Valves: The chambers are to be tested separately (one at a time). Through the Topping Up Valve, inflate chamber to approximately 2.00 PSI, soap the (3) valves to detect leakage. Then slowly inflate chamber until pressure relief valve vents. Use leak detector or non detergent soap to detect the opening and the closing. A hissing sound may also denote that the valve has started to open. Record the opening/closing time and pressure. The opening pressure shall be between 3.3 – 3.5 PSI and the closing pressure shall not be less than 3.00 PSI, in order for the test to be acceptable. After 24 hours, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period (see sheet 2).

The corrected pressure reading shall not be less than 1.60 PSI in order for the Test to be acceptable.

Upon completion of the Final Test, inflate both chambers equally to approx. 2.00 PSI and perform Dimensional Verification below. Perform additional inspection of the tapes and girt assembly.

Pressure Relief Valve Test	PRV Serial Numbers	Opening		Closing		Pass / Fail
		Time ON	Pressure PSI	Time	Close PSI	
Chamber # 1						
Chamber # 2 (Main Seam)						

Chambers	Design (closing) Pressure as per above	24 Hour Leakage Test							
		Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g	Pass / Fail
# 1	PSI			PSI				PSI	
Re-Test									
# 2 (Main Seam)	PSI			PSI				PSI	
Re-Test									

Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail
3.5	$\pm 0.100^*$			47.0	$\pm 0.5$			24.75	$\pm 0.5$		
7.3	$\pm 0.100^*$							31.0	$\pm 0.5$		

\* = IAW QSI 018, rev. A dated 03-05-29

### Submission of Adhesive Testing:

	Subm.Date / am-pm	Pass/Fail						
Peel	24 hour	Nov 29/04	Pass	Nov 30/04	Pass	Nov 30/04	Pass	Jan 3/05
	7 day	Nov 29/04	Pass	Nov 30/04	Pass	Nov 30/04	Pass	
Shear	24 hour	Nov 29/04	Pass	Nov 30/04	Pass	Nov 30/04	Pass	Jan 3/05
	7 day	Nov 29/04	Pass	Nov 30/04	Pass	Nov 30/04	Pass	

\* 10

## Description: Float Bag Assembly

-Items are Manufactured IAW Process Control Specification No. 001, 002, 003, 004, 005, 006, and are to be 100% inspected I.A.W. P.I.P. 001

W/O: 3663 TSP/N: 8927 Qty.: 1 Customer P/N: D3218-041 Dwg. No.: D3218 Rev.: A Date: \_\_\_\_\_

Cutting IAW PCS 003		Marking IAW PCS 004		Bonding IAW PCS 002		Silkscreen	
Operator No.	Date	Operator No.	Date	Operator No.	Date	Operator No.	Date
85	Nov. 30/04	73	Dec 01/04	73	( Documented below )	73	Dec 15/04
						73	Nov. 15/04

\* Note: PCS 006, there shall be a total of 2 samples submitted for the Testing of the Adhesive (Peel and Shear Test), at start and end of every production day, record on sheet 3/3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
1- a) a) Attach Panel A (uneven edge) to larger edge of Panel B, centered on a 2" inner tape (butt joint) $\pm$ 1/8"	37 Nov. 30/04		1	-	-	1	11	Nov. 30/04
b) Attach (6) Valve Flanges on Panel A: 2-Relief, 2-Inlet & 2- Topping Up	37 Nov. 30/04		6	--	-	6		Nov. 30/04
c) Attach (6) Doublers on above Flanges	18 Nov. 30/04		6	-	-	6	SS	Nov. 30/04
2- a) Attach Panel C to Straight edge of Panel A, centered on a 2" inner Tape (butt joint) $\pm$ 1/8"	18 Nov. 30/04	Bonding	1	-	-	1	11	Nov. 30/04
	37							
3- a) Att. Panel D to Panel B (shorter edge) with 2" inner Tape	18 Nov. 30/04		1	-	-	1	SS	Nov. 30/04
	37							
4- a) Baffle Ass'y. with 2" Tape $\pm$ 1/8"	117 Nov. 30/04	Bonding	1	-	-	1	11	Nov. 30/04
	17 Nov. 30/04							
5- a) Attach Baffle Ass'y. to Bag ( in 3 stages, minimum )	37 Nov. 30/04		1	-	-	1	11	Nov. 30/04
	18 Nov. 30/04							
6- a) Perform Baffle Test on Chamber # 1 after a 3 day Cure Time	12 Nov. 23/04	Testing (see sheet 2)	1	-	-	1	11	Nov. 23/04
	Nov. 23/04							
7- a) Closure of 1" Main Seam (overlap) $\pm$ 1/8" b) Attach ID Patch (ref. CAR 04-003)	37 Nov. 23/04	Bonding	1	-	-	1	11	Nov. 23/04
	117 Nov. 23/04							
8- a) Perform Baffle Test on Chamber # 2 after a 3 day Cure Time	12 Nov. 29/04	Testing (see sheet 2)	1	-	-	1	11	Nov. 29/04
	Nov. 29/04							
9- a) Attach 1" wide Finishing Tape on all Butt Joints & Main Seam, Centered $\pm$ 1/8" b) Att. Inspected Girt Ass'y. (Form 193-8927, Girt) to Bag	37 Nov. 29/04	Bonding	1	-	-	1	11	Nov. 30/04
	37 Nov. 30/04							
c) Attach 5" split patch on each end ( x 4 )	37 Nov. 30/04		1	-	-	1	11	Nov. 30/04
	37 Nov. 30/04							

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
10- a) Final Test b) Inspector to Stamp on ID Patch: Serial No.: B 21829-02 & Inspection Stamp beside the S/N	12 Dec 3/04	Testing (see sheet 3)	1	-	-	1	4	Dec 3/04
	12 Dec 23/04		1	-	-	1		Dec 23/04

Upon completion of the (final) leakage test, the ID Patch shall be stamped with 5/16" high lettering and black ink: serial number (7 digits), provided by DART (refer to W/O). Verify the integrity of the Valves (Threads/gaskets).

#### Test Conditions – All tests shall be performed in the following conditions:

a) Atmospheric pressure between 28 to 32 inches of mercury (94.8 kPa to 108.4 kPa) b) Temperature shall be  $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$  c) Relative humidity shall be 80 % or less

#### Baffle Test:

Over Pressure: Using socket tool and torque wrench s/n 0801300327, tight all (3) Valves to 40 inch pound, the JIC adaptor s/n 44537 between 15 to 20 foot pounds. Block the Relief valve with flagged pin. Inflate Chamber to 4.36 PSI (30 kPa) with clean dry air source. Using leak detector or non detergent soap, check all the valves and seams to detect leakage. Leakage shall be cause for rejection (soap during testing period). Fuzz is not considered a failure. After 5 minutes, there shall be no evidence of distortion or damage to the seams.

Inflation Test: Lower Chamber to 3.00 psi, re-adjust after 45 minutes. After 1 hour, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period. The corrected pressure reading shall not be less than 2.94PSI in order for the Test to be acceptable.

- 0.054 PSI for each  $1^{\circ}\text{C}$  of temperature increase
- + 0.054 PSI for each  $1^{\circ}\text{C}$  of temperature decrease
- + 0.049 PSI for each 0.1 inch of barometric increase
- 0.049 PSI for each 0.1 inch of barometric decrease

Chambers	Pressure	5 Min. Over P & Soap Test	45 Minute Stabilizing Period				1 Hour Test						1970			
			Pass / Fail	Design Pressure	Time On	Time Off	Design Pressure	Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g	Pass / Fail	
# 1 (see note 1)	4.36 PSI	Pass	Pass	3.00 PSI	8.45	9:30	3.00 PSI	9:30	10:30	3.03 PSI	21 °C 21 °C	29.81 29.81	29.67 29.67	- 0.0038	2.9931 PSI	Pass
Re-Test																
# 2 (Main Seam)	4.36 PSI	Pass	Pass	3.00 PSI	11:00	11:45	3.00 PSI	11:45	12:45	2.98 PSI	22 °C 22 °C	30.13 30.13	30.12 30.12	- 0.0041	2.9731 PSI	Pass
Re-Test																

Note 1: Chamber # 1 requires Dart Aerospace Approval Signature: Chris Brown Date: 09/11/02

Observations: Small/increased bubbles in one seam to be glued checked. Small amount of lifting at weld to be glued.

TUEMAR

# 10

## Product Inspection Form # 193-8927(Tube &amp; Final)

Rev. D Sheet 3/3

**Final Test:** Leakage / Relief Valves: The chambers are to be tested separately (one at a time). Through the Topping Up Valve, inflate chamber to approximately 2.00 PSI, soap the (3) valves to detect leakage. Then slowly inflate chamber until pressure relief valve vents. Use leak detector or non detergent soap to detect the opening and the closing. A hissing sound may also denote that the valve has started to open. Record the opening/closing time and pressure. The opening pressure shall be between 3.3 - 3.5 PSI and the closing pressure shall not be less than 3.00 PSI, in order for the test to be acceptable. After 24 hours, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period (see sheet 2).

The corrected pressure reading shall not be less than 1.60 PSI in order for the Test to be acceptable.

Upon completion of the Final Test, inflate both chambers equally to approx. 2.00 PSI and perform Dimensional Verification below. Perform additional inspection of the tapes and girt assembly.

Pressure Relief Valve Test	PRV Serial Numbers	Opening		Closing		Pass / Fail
		Time ON	Pressure	Time	Close	
Chamber # 1	32864	9:25	3.49 PSI	9:30	3.30 PSI	Pass
Chamber # 2 (Main Seam)	32854	12:40	3.40 PSI	12:45	3.14 PSI	Pass

Chambers doc 12004	Design (closing) Pressure as per above	24 Hour Leakage Test							Final Read'g	Pass / Fail
		Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.			
# 1	3.30 PSI	9:30	9:30	2.33 PSI	22° 23°	29.28 29.76	+0.054 Bar +0.225	2.40 PSI	Pass	
Re-Test										
# 2 (Main Seam)	3.14 PSI	12:45	12:45	2.07 PSI	23° 23°	29.78 29.58	-0.098	1.97 PSI	Pass	
Re-Test										

Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail
3.5	± 0.100 *	3.5	Pass	47.0	± 0.5	46 7/8	Pass	24.75	± 0.5	25 1/8	Pass
7.3	± 0.100 *	7.3	Pass					31.0	± 0.5	31 1/8	Pass

\* = IAW QSI-018, rev. A dated 03-05-29

*S. Johnson*

## Submission of Adhesive Testing:

		Subm.Date / am-pm	Pass/Fail						
Peel	24 hour	Nov 17/04	Pass	Nov 18/04	Pass	Nov 29/04	Pass	Nov 29/04	Pass
	7 day	Nov 17/04	Pass	Nov 18/04	Pass	Nov 29/04	Pass	Nov 29/04	Pass
Shear	24 hour	Nov 17/04	Pass	Nov 18/04	Pass	Nov 29/04	Pass	Nov 29/04	Pass
	7 day	Nov 17/04	Pass	Nov 18/04	Pass	Nov 29/04	Pass	Nov 29/04	Pass

#1

## Description: Float Bag Assembly

-Items are Manufactured IAW Process Control Specification No. 001, 002, 003, 004, 005, 006, and are to be 100% inspected I.A.W. P.I.P. 001

W/O: 3664 TSS P/N: 8927 Qty.: 12 Customer P/N: D3218-041 Dwg. No.: D3218 Rev.: A Date: \_\_\_\_\_

Cutting IAW PCS 003		Marking IAW PCS 004		Bonding IAW PCS 002		Silkscreen	
Operator No.	Date	Operator No.	Date	Operator No.	Date	Operator No.	Date
85	<u>Nov. 30/04</u>	73	<u>Dec 01/04</u>			73	<u>Dec 15/04</u>
				( Documented below )		73	<u>Nov. 15/04</u>

\* Note: PCS 006, there shall be a total of 2 samples submitted for the Testing of the Adhesive (Peel and Shear Test), at start and end of every production day, record on sheet 3/3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
1- a) a) Attach Panel A (uneven edge) to larger edge of Panel B, centered on a 2" inner tape (butt joint) $\pm 1/8"$ b) Attach (6) Valve Flanges on Panel A: 2-Relief, 2-Inlet & 2- Topping Up c) Attach (6) Doublers on above Flanges	37 <u>1 dec .04</u>	7/04-25 Bonding	1 6 6	- - -	-	1 6 6	11 11 11	<u>Dec 1/04</u> <u>Dec 1/04</u> <u>Dec 1/04</u>
2- a) Attach Panel C to Straight edge of Panel A, centered on a 2" inner Tape (butt joint) $\pm 1/8"$	37 <u>1 dec 04</u>	7/04-25	1	-	-	1	11	<u>Dec 1/04</u>
3- a) Att. Panel D to Panel B (shorter edge) with 2" inner Tape	37 <u>1 dec .04</u>	7/04-25	1	-	-	1	11	<u>Dec 1/04</u>
4- a) Baffle Ass'y. with 2" Tape $\pm 1/8"$	Helee 117 <u>1 dec 04</u>	Bonding	1	-	-	1	11	<u>Dec 1/04</u>
5- a) Attach Baffle Ass'y. to Bag ( in 3 stages, minimum )	117 <u>2 dec 04</u>		1	-	-	1	11	<u>Dec 2/04</u>
6- a) Perform Baffle Test on Chamber # 1 after a 3 day Cure Time	12 <u>Dec 7/04</u>	Testing (see sheet 2)	1	-	-	1	4	<u>Dec 7/04</u>
7- a) Closure of 1" Main Seam (overlap) $\pm 1/8"$ b) Attach ID Patch (ref. CAR 04-003)	37 <u>7 dec .04</u> 37 <u>16 dec 04</u>	7/04-26 Bonding 7/04-26	1 1	- -	-	1 1	11 11	<u>Dec 9/04</u> <u>Dec 17/04</u>
8- a) Perform Baffle Test on Chamber # 2 after a 3 day Cure Time	12 <u>13 dec 2004</u>	Testing (see sheet 2)	1	-	-	1	4	<u>Dec 13/04</u>
9- a) Attach 1" wide Finishing Tape on all Butt Joints & Main Seam, Centered $\pm 1/8"$ b) Att. Inspected Girt Ass'y. (Form 193-8927, Girt) to Bag c) Attach 5" split patch on each end ( x 4 )	37 <u>13 dec 04</u> 37 <u>15 dec 04</u> 117 <u>16 dec 04</u>	7/04-26 Bonding	1 1 4	- - -	-	1 1 4	11 11 11	<u>Dec 17/04</u> <u>Dec 17/04</u> <u>Dec 17/04</u>

**Final Test:** Leakage / Relief Valves: The chambers are to be tested separately (one at a time). Through the Topping Up Valve, inflate chamber to approximately 2.00 PSI, soap the (3) valves to detect leakage. Then slowly inflate chamber until pressure relief valve vents. Use leak detector or non detergent soap to detect the opening and the closing. A hissing sound may also denote that the valve has started to open. Record the opening/closing time and pressure. The opening pressure shall be between 3.3 – 3.5 PSI and the closing pressure shall not be less than 3.00 PSI, in order for the test to be acceptable. After 24 hours, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period (see sheet 2).

The corrected pressure reading shall not be less than 1.60 PSI in order for the Test to be acceptable.

Upon completion of the Final Test, inflate both chambers equally to approx. 2.00 PSI and perform Dimensional Verification below. Perform additional inspection of the tapes and girt assembly.

Pressure Relief Valve Test	PRV Serial Numbers	Opening		Closing		Pass Fail
		Time ON	Pressure	Time	Close	
Chamber # 1	33180	8:10	3.20 PSI	8:15	3.00 PSI	Pass
Chamber # 2 (Main Seam)	33189	8:20	3.50 PSI	8:25	3.00 PSI	Pass

Chambers	Design (closing) Pressure as per above	24 Hour Leakage Test							Final Read'g	Pass Fail
		Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.			
Dec 20 2004										
# 1	3.00 PSI	8:15	8:15	2.17 PSI	24° 23°	29.87 29.82	+0.054 -0.024	2.19 PSI	Pass	
Re-Test										
Dec 21 2004										
Main Seam)	3.00 PSI	8:25	8:25	1.88 PSI	23° 23°	29.81 29.95	+0.068	1.94 PSI	Pass	
Re-Test										

Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail
.5	± 0.100 *	3.5	Pass	47.0	± 0.5	46 3/4	Pass	24.75	± 0.5	25.25	Pass
.3	± 0.100 *	7.85	Pass					31.0	± 0.5	31 3/16	Pass

\* = IAW QSI 018, rev. A dated 03-05-29



### Submission of Adhesive Testing:

	Subm.Date / am-pm	Pass/Fail						
Peel	24 hour	Dec 1/04	Pass	Dec 1/04	Pass	Dec 15/04	Pass	
	7 day	Dec 1/04	Pass	Dec 1/04	Pass	Dec 15/04	Pass	
Shear	24 hour	Dec 1/04	Pass	Dec 1/04	Pass	Dec 15/04	Pass	
	7 day	Dec 1/04	Pass	Dec 1/04	Pass	Dec 15/04	Pass	

#3

Rev. D Sheet 1/3

## Description: Float Bag Assembly

Items are Manufactured IAW Process Control Specification No. 001, 002, 003, 004, 005, 006, and are to be 100% inspected I.A.W. P.I.P. 001

W/O: 3664 TSS P/N: 8927 Qty.: 12 Customer P/N: D3218-041 Dwg. No.: D3218 Rev.: A Date: \_\_\_\_\_

Cutting IAW PCS 003		Marking IAW PCS 004		Bonding IAW PCS 002		Silkscreen	
Operator No.	Date	Operator No.	Date	Operator No.	Date	Operator No.	Date
85	Nov 30/04	73	Dec 01/04			73	Dec 15/04
				(Documented below)		73	Nov. 15/04

\* Note: PCS 006, there shall be a total of 2 samples submitted for the Testing of the Adhesive (Peel and Shear Test), at start and end of every production day, record on sheet 3/3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stg 1	Date
1- a) Attach Panel A (uneven edge) to larger edge of Panel B, centered on a 2" inner tape (butt joint) $\pm$ 1/8"	37 2 dec. 04	7/04-25	1	-	-	1	11	Dec 2/04
b) Attach (6) Valve Flanges on Panel A: 2-Relief, 2-Inlet & 2- Topping Up	37 1 dec. 04	7/04-25	6	-	-	6	11 S.S.	Dec 1/04
c) Attach (6) Doublers on above Flanges	37 1 dec 04	Bonding	6	-	-	6	11 S.S.	Dec 1/04
2- a) Attach Panel C to Straight edge of Panel A, centered on a 2" inner Tape (butt joint) $\pm$ 1/8"	37 2 dec. 04	7/04-25	1	-	-	1	11 S.S.	Dec 2/04
3- a) Att. Panel D to Panel B (shorter edge) with 2" inner Tape	37 2 dec. 04	7/04-25	1	-	-	1	11 S.S.	Dec 2/04
4- a) Baffle Ass'y. with 2" Tape $\pm$ 1/8"	117 2 dec 04	Bonding	1	-	-	1	11 S.S.	Dec 2/04
5- a) Attach Baffle Ass'y. to Bag ( in 3 stages, minimum )	117 3 dec 04	Bonding	1	-	-	1	11 S.S.	Dec 5/04
6- a) Perform Baffle Test on Chamber # 1 after a 3 day Cure Time	12 8 dec 04	Testing (see sheet 2)	1	-	-	1	4	Dec 8/04
7- a) Closure of 1" Main Seam (overlap) $\pm$ 1/8"	37 9 dec 04	7/04-26	1	-	-	1	11 S.S.	Dec 9/04
b) Attach ID Patch (ref. CAR 04-003)	37 16 dec. 04	Bonding	1	-	-	1	11 S.S.	Dec 17/04
8- a) Perform Baffle Test on Chamber # 2 after a 3 day Cure Time	12 Dec 13 dec 04	Testing (see sheet 2)	1	-	-	1	4	Dec 13/04
9- a) Attach 1" wide Finishing Tape on all Butt Joints & Main Seam, Centered $\pm$ 1/8"	37 13 dec. 04	7/04-26	1	-	-	1	11 S.S.	Dec 17/04
b) Att. Inspected Girt Ass'y. (Form 193-8927, Girt) to Bag	37 15 dec.	Bonding	1	-	-	1	11 S.S.	Dec 17/04
c) Attach 5" split patch on each end ( x 4 )	117 16 dec 04		4	-	-	4	11 S.S.	Dec 17/04

TULMAR #3

## Product Inspection Form # 193-8927(Tube &amp; Final)

Rev. D Sheet 2/3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
10- a) Final Test b) Inspector to Stamp on ID Patch: Serial No.: B <b>21829-04</b> & Inspection Stamp beside the S/N	12 Dec 23/04	Testing (see sheet 3)	1	—	—	1	A	Dec 23/04
	12 Dec 23/04		1	—	—	1	4	Dec 23/04

Upon completion of the (final) leakage test, the ID Patch shall be stamped with 5/16" high lettering and black ink; serial number (7 digits), provided by DART (refer to W/D). Verify the integrity of the Valves (Threads/gaskets).

Test Conditions – All tests shall be performed in the following conditions:

a) Atmospheric pressure between 28 to 32 inches of mercury (94.8 kPa to 108.4 kPa) b) Temperature shall be 20°C ± 5°C c) Relative humidity shall be 80 % or less

## Baffle Test:

Over Pressure: Using socket tool and torque wrench s/n 0801300327, tight all (3) Valves to 40 inch pound, the JIC adaptor s/n 44537 between 15 to 20 foot pounds. Block the Relief valve with flagged pin. Inflate Chamber to 4.36 PSI (30 kPa) with clean dry air source. Using leak detector or non detergent soap, check all the valves and seams to detect leakage.

Leakage shall be cause for rejection (soap during testing period). Fuzz is not considered a failure. After 5 minutes, there shall be no evidence of distortion or damage to the seams.

Inflation Test: Lower Chamber to 3.00 psi, re-adjust after 45 minutes. After 1 hour, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period. The corrected pressure reading shall not be less than 2.94 PSI in order for the Test to be acceptable.

- 0.054 PSI for each 1°C of temperature increase
- + 0.054 PSI for each 1°C of temperature decrease
- + 0.049 PSI for each 0.1 inch of barometric increase
- 0.049 PSI for each 0.1 inch of barometric decrease

Dec 8/04 Chambers	Pressure	5 Min Over P. & Soap Test	45 Minute Stabilizing Period				1 Hour Test						<i>Humidity 16%</i>		
			Pass / Fail	Design Pressure	Time On	Time Off	Design Pressure	Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g	
# 1 (see note 1)	4.36 PSI	<i>Pass</i>	Pass	3.00 PSI	8:15	9:00	3.00 PSI	9:00	10:00	3. PSI	22°	22°	-0.029	3. PSI	<i>Pass</i>
Re-Test															
Dec 13/04 (Main Seam)	4.36 PSI	<i>Pass</i>	Pass	3.00 PSI	8:30	9:15	3.00 PSI	9:15	10:15	3. PSI	23°	23°	+0.004	3. PSI	<i>Pass</i>
Re-Test															

Note 1: Chamber # 1 requires Dart Aerospace Approval Signature: *John Pinner* Date: 04/12/08  
Observations: *OK*

**Final Test:** Leakage / Relief Valves: The chambers are to be tested separately (one at a time). Through the Topping Up Valve, inflate chamber to approximately 2.00 PSI, soap the (3) valves to detect leakage. Then slowly inflate chamber until pressure relief valve vents. Use leak detector or non detergent soap to detect the opening and the closing. A hissing sound may also denote that the valve has started to open. Record the opening/closing time and pressure. The opening pressure shall be between 3.3 – 3.5 PSI and the closing pressure shall not be less than 3.00 PSI, in order for the test to be acceptable. After 24 hours, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period (see sheet 2).

The corrected pressure reading shall not be less than 1.60 PSI in order for the Test to be acceptable.

Upon completion of the Final Test, inflate both chambers equally to approx. 2.00 PSI and perform Dimensional Verification below. Perform additional inspection of the tapes and girt assembly.

Pressure Relief Valve Test	PRV Serial Numbers	Opening		Closing		Pass/Fail
		Time ON	Pressure	Time	Close	
Chamber # 1	33186	8:20	3.27 PSI	8:25	3.00 PSI	Pass
Chamber # 2 (Main Seam)	33188	8:35	3.32 PSI	8:40	3.00 PSI	Pass

Chambers	Design (closing) Pressure as per above	24 Hour Leakage Test								Pass/Fail
		Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g		
Dec 20/04							+0.054			
# 1	3.00 PSI	8:25	8:25	2.36 PSI	24° 23°	29.87 29.81	-0.029	2.38 PSI		Pass
Re-Test										
Dec 21/04										
(Main Seam)	3.00 PSI	8:40	8:40	1.95 PSI	23 23	29.82 29.95	-0.063	2.01 PSI		Pass
Re-Test										

Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail
3.5	± 0.100 *	3.5	Pass	47.0	± 0.5	46 3/4	Pass	24.75	± 0.5	25.25	Pass
7.3	± 0.100 *	7.3	Pass					31.0	± 0.5	31 3/16	Pass

\* = IAW QSI 018, rev. A dated 03-05-29

(10)

#### Submission of Adhesive Testing:

	Subm.Date / am-pm	Pass/Fail							
Peel	24 hour	Dec 1/04	Pass	Dec 1/04	Pass	Dec 2/04	Pass	Dec 16/04	Pass
	7 day	Dec 1/04	Pass	Dec 1/04	Pass	Dec 2/04	Pass	Dec 16/04	Pass
Shear	24 hour	Dec 1/04	Pass	Dec 1/04	Pass	Dec 2/04	Pass	Dec 16/04	Pass
	7 day	Dec 1/04	Pass	Dec 1/04	Pass	Dec 2/04	Pass	Dec 16/04	Pass

#5

## Description: Float Bag Assembly

-Items are Manufactured IAW Process Control Specification No. 001, 002, 003, 004, 005, 006, and are to be 100% inspected I.A.W. P.I.P. 001

W/O: 3664 TSS P/N: 8927 Qty.: 12 Customer P/N: D3218-041 Dwg. No.: D3218 Rev.: A Date: \_\_\_\_\_

Cutting IAW PCS 003		Marking IAW PCS 004		Bonding IAW PCS 002		Silkscreen	
Operator No.	Date	Operator No.	Date	Operator No.	Date	Operator No.	Date
85	<u>Nov 30/04</u>	73	<u>Dec 01/04</u>			73	<u>Dec 15/04</u>
( Documented below )						73	<u>Nov. 15/04</u>

\* Note: PCS 006, there shall be a total of 2 samples submitted for the Testing of the Adhesive (Peel and Shear Test), at start and end of every production day, record on sheet 3/3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
1- a) a) Attach Panel A (uneven edge) to larger edge of Panel B, centered on a 2" inner tape (butt joint) $\pm 1/8"$	37 3dec.04	7104-25	1	-	-	1		Dec 3/04
b) Attach (6) Valve Flanges on Panel A: 2-Relief, 2-Inlet & 2-Topping Up	37 2dec.04		6	-	-	6	SS	Dec 2/04
c) Attach (6) Doublers on above Flanges	37 2dec.04	Bonding	6	-	-	6	11	Dec 2/04
2- a) Attach Panel C to Straight edge of Panel A, centered on a 2" inner Tape (butt joint) $\pm 1/8"$	37 3dec.04	7104-25	1	-	-	1	SS	Dec 3/04
	3dec.04		1	-	-	1	11	Dec 3/04
3- a) Att. Panel D to Panel B (shoulder edge) with 2" inner Tape	37 3dec.04		1	-	-	1	SS	Dec 3/04
4- a) Baffle Ass'y. with 2" Tape $\pm 1/8"$	117 3dec.04	Bonding	1	-	-	1	11	Dec 3/04
5- a) Attach Baffle Ass'y. to Bag ( in 3 stages, minimum )	117 6dec.04		1	-	-	1	SS	Dec 6/04
6- a) Perform Baffle Test on Chamber # 1 after a 3 day Cure Time	12 12 dec 04	Testing (see sheet 2)	1	-	-	1	SS	Dec 9/04
7- a) Closure of 1" Main Seam (overlap) $\pm 1/8"$ b) Attach ID Patch (ref. CAR 04-003)	37 13 dec 04 12 21 dec 04	7104-26 Bonding	1	-	-	1	SS 11	Dec 13/04
8- a) Perform Baffle Test on Chamber # 2 after a 3 day Cure Time	12 16 dec 04	Testing (see sheet 2)	1	-	-	1	11	Dec 21/04
9- a) Attach 1" wide Finishing Tape on all Butt Joints & Main Seam, Centered $\pm 1/8"$	37 17 dec 04	7101-26	1	-	-	1	SS 11	Dec 22/04
b) Att. Inspected Girt Ass'y. (Form 193-8927, Girt) to Bag	117 21 dec 04	Bonding	1	-	-	1	11	Dec 22/04
c) Attach 5" split patch on each end ( x 4 )	117 21 dec 04		1	-	-	1	SS 11	Dec 22/04

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
10- a) Final Test b) Inspector to Stamp on ID Patch: Serial No.: B <b>21829-05</b> & Inspection Stamp beside the S/N	12 Dec 23/04	Testing (see sheet 3)	1	-	-	1	4	Dec 23/04
	12 Dec 23/04		1	-	-	1	4	Dec 23/04

Upon completion of the (final) leakage test, the ID Patch shall be stamped with 5/16" high lettering and black ink: serial number (7 digits), provided by DART (refer to W/O). \* Verify the integrity of the Valves (Threads/gaskets).

#### Test Conditions – All tests shall be performed in the following conditions:

a) Atmospheric pressure between 28 to 32 inches of mercury (94.8 kPa to 108.4 kPa) b) Temperature shall be  $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$  c) Relative humidity shall be 80 % or less

#### Baffle Test:

Over Pressure: Using socket tool and torque wrench s/n 0801300327, tight all (3) Valves to 40 inch pound, the JIC adaptor s/n 44537 between 15 to 20 foot pounds. Block the Relief valve with flagged pin. Inflate Chamber to 4.36 PSI (30 kPa) with clean dry air source. Using leak detector or non detergent soap, check all the valves and seams to detect leakage. Leakage shall be cause for rejection (soap during testing period). Fuzz is not considered a failure. After 5 minutes, there shall be no evidence of distortion or damage to the seams.

Inflation Test: Lower Chamber to 3.00 psi, re-adjust after 45 minutes. After 1 hour, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period. The corrected pressure reading shall not be less than 2.94PSI in order for the Test to be acceptable.

- 0.054 PSI for each  $1^{\circ}\text{C}$  of temperature increase
- + 0.054 PSI for each  $1^{\circ}\text{C}$  of temperature decrease
- + 0.049 PSI for each 0.1 inch of barometric increase
- 0.049 PSI for each 0.1 inch of barometric decrease

Chambers	Pressure	5 Min Over P. & Soap Test	45 Minute Stabilizing Period			1 Hour Test						humy 10%			
			Pass / Fail	Design Pressure	Time On	Time Off	Design Pressure	Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g	Pass / Fail
SC92004	4.36 PSI	Pass		3.00 PSI	8:35	9:20	3.00 PSI	9:30	10:30	3.02 PSI	22° 22°	30.05 30.04	-0.004	3. PS1 PSI	Pass
# 1 see note 1)	4.36 PSI														
Re-Test															
SC1102004 (main Seam)	4.36 PSI	Pass		3.00 PSI	10:55	11:40	3.00 PSI	11:40	12:40	3.01 PSI	23° 23°	29.87 29.84	-0.014	2.99 PSI	Pass
Re-Test															

Note 1: Chamber # 1 requires Dart Aerospace Approval Signature: Chris Phenard Date: 09/12/10

Observations: One area on inside seam to be pushed down/glued. Otherwise OK

**Final Test:** Leakage / Relief Valves: The chambers are to be tested separately (one at a time). Through the Topping Up Valve, inflate chamber to approximately 2.00 PSI, soap the (3) valves to detect leakage. Then slowly inflate chamber until pressure relief valve vents. Use leak detector or non detergent soap to detect the opening and the closing. A hissing sound may also denote that the valve has started to open. Record the opening/closing time and pressure. The opening pressure shall be between 3.3 – 3.5 PSI and the closing pressure shall not be less than 3.00 PSI, in order for the test to be acceptable. After 24 hours, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period (see sheet 2).

The corrected pressure reading shall not be less than 1.60 PSI in order for the Test to be acceptable.

Upon completion of the Final Test, inflate both chambers equally to approx. 2.00 PSI and perform Dimensional Verification below. Perform additional inspection of the tapes and girt assembly.

Pressure Relief Valve Test	PRV Serial Numbers	Opening		Closing		Pass/Fail
		Time ON	Pressure	Time	Close	
Chamber # 1	33183	11:55	3.50 PSI	12:00	3.02 PSI	Pass
Chamber # 2 (Main Seam)	33184	12:50	3.26 PSI	12:55	3.01 PSI	Pass

Chambers	Design (closing) Pressure as per above	24 Hour Leakage Test								Pass/Fail
		Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g	Pass/Fail	
Dec 23/04 #1	3.02 PSI	12:00	12:00	2.09 PSI	23 23	29.75 29.94	— + 0.093	2.18 PSI	Pass	
Re-Test										
Dec 22/04 Main Seam	12.55 PSI	12:55	12:55	2.53 PSI	23 23	29.94 29.41	— - 0.259	2.27 PSI	Pass	
Re-Test										

Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail
.5	± 0.100 *	3.3/16	Pass	47.0	± 0.5	16 9/16-3/4	Pass	24.75	± 0.5	25 1/16	Pass
.3	± 0.100 *	7.25	Pass					31.0	± 0.5	31 3/8	Pass

\* = IAW QSI 018, rev. A dated 03-05-29

(A)

### Submission of Adhesive Testing:

	Subm. Date / am-pm	Pass/Fail						
Peel	24 hour	Dec 3/04	Pass	Dec 13/04	Pass	Dec 17/04	Pass	
	7 day	Dec 3/04	Pass	Dec 13/04	Pass	Dec 17/04	Pass	
Shear	24 hour	Dec 3/04	Pass	Dec 13/04	Pass	Dec 17/04	Pass	
	7 day	Dec 3/04	Pass	Dec 13/04	Pass	Dec 17/04	Pass	

#12

## Description: Float Bag Assembly

-Items are Manufactured IAW Process Control Specification No. 001, 002, 003, 004, 005, 006, and are to be 100% inspected I.A.W. P.I.P. 001

W/O: 3664TSS P/N: 8927Qty.: 12 Customer P/N: D3218-041Dwg. No.: D3218Rev.: ADate: Nov/Dec/04

Cutting IAW PCS 003		Marking IAW PCS 004		Bonding IAW PCS 002		Silkscreen	
Operator No.	Date	Operator No.	Date	Operator No.	Date	Operator No.	Date
<u>85</u>	<u>Nov 30/04</u>	<u>73</u>	<u>Dec 01/04</u>			<u>73</u>	<u>Dec 15/04</u>
( Documented below )						<u>73</u>	<u>Nov. 15/04</u>

\* Note: PCS 006, there shall be a total of 2 samples submitted for the Testing of the Adhesive (Peel and Shear Test), at start and end of every production day, record on sheet 3/3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
1- a) a) Attach Panel A (uneven edge) to larger edge of Panel B, centered on a 2" inner tape (butt joint) $\pm$ 1/8"	<u>37</u> <u>6 dec. 04</u>	<u>7104-25</u>	<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 11</u>	<u>Dec 6/04</u>
b) Attach (6) Valve Flanges on Panel A: 2-Relief, 2-Inlet & 2-Topping Up	<u>71-110</u> <u>6/13/04</u>	<u>Bonding</u>	<u>4</u>	<u>—</u>	<u>—</u>	<u>6</u>	<u>TSB 9</u>	<u>Dec. 6/04</u>
c) Attach (6) Doublers on above Flanges	<u>6</u> <u>6/13/04</u>	<u>25</u>	<u>6</u>	<u>—</u>	<u>—</u>	<u>6</u>		
2- a) Attach Panel C to Straight edge of Panel A, centered on a 2" inner Tape (butt joint) $\pm$ 1/8"	<u>37</u> <u>6 dec. 04</u>	<u>7104-25</u>	<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 11</u>	<u>Dec 6/04</u>
3- a) Att. Panel D to Panel B (shorter edge) with 2" inner Tape	<u>37</u> <u>6 dec. 04</u>		<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 11</u>	<u>Dec 6/04</u>
4- a) Baffle Ass'y. with 2" Tape $\pm$ 1/8"	<u>117</u> <u>6 dec 04</u>	<u>Bonding</u>	<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 11</u>	<u>Dec 6/04</u>
5- a) Attach Baffle Ass'y. to Bag (in 3 stages, minimum )	<u>117</u> <u>7 dec 04</u>		<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 11</u>	<u>Dec 7/04</u>
6- a) Perform Baffle Test on Chamber # 1 after a 3 day Cure Time	<u>12</u> <u>Dec 10/2004</u>	<u>Testing</u> (see sheet 2)	<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 4</u>	<u>Dec 10/04</u>
7- a) Closure of 1" Main Seam (overlap) $\pm$ 1/8" b) Attach ID Patch (ref. CAR 04-003)	<u>37</u> <u>13 dec. 04</u> <u>37</u> <u>22 dec. 04</u>	<u>7104-26</u> <u>Bonding</u>	<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 185</u> <u>TSB 157</u> <u>TSB 11</u>	<u>Dec 13/04</u> <u>Dec 22/04</u>
8- a) Perform Baffle Test on Chamber # 2 after a 3 day Cure Time	<u>12</u> <u>17 dec 04</u>	<u>Testing</u> (see sheet 2)	<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 4</u>	<u>Dec 17/04</u>
9- a) Attach 1" wide Finishing Tape on all Butt Joints & Main Seam, Centered $\pm$ 1/8" b) Att. Inspected Girt Ass'y. (Form 193-8927, Girt) to Bag c) Attach 5" split patch on each end ( x 4 )	<u>37</u> <u>21 dec. 04</u> <u>37</u> <u>21 dec. 04</u> <u>37</u> <u>21 dec. 04</u>	<u>7104-26</u> <u>Bonding</u> <u>7104-26</u>	<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>	<u>TSB 11</u>	<u>Dec 21/04</u>

TULMAR # 12

## Product Inspection Form # 193-8927(Tube &amp; Final)

Rev. D Sheet 2/3

Stages & Descriptions	Operator No. + Date	Operation	Accept. Qty.	Reject. Qty.	NCR	Total Accept.	Insp. Stamp	Date
10- a) Final Test b) Inspector to Stamp on ID Patch: Serial No.: B 21829-06 & Inspection Stamp beside the S/N	12 Jan 4/05  12 Jan 4/05	Testing (see sheet 3)	1	—	—	1	4	Jan 4/05
			1	—	—	1	4	Jan 4/05

Upon completion of the (final) leakage test, the ID Patch shall be stamped with 5/16 " high lettering and black ink: serial number (7 digits), provided by DART (refer to W/O). \* Verify the integrity of the Valves (Threads/gaskets).

## Test Conditions – All tests shall be performed in the following conditions:

a) Atmospheric pressure between 28 to 32 inches of mercury (94.8 kPa to 108.4 kPa) b) Temperature shall be  $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$  c) Relative humidity shall be 80 % or less

## Baffle Test:

Over Pressure: Using socket tool and torque wrench s/n 0801300327, tight all (3) Valves to 40 inch pound, the JIC adaptor s/n 44537 between 15 to 20 foot pounds. Block the Relief valve with flagged pin. Inflate Chamber to 4.36 PSI (30 kPa) with clean dry air source. Using leak detector or non detergent soap, check all the valves and seams to detect leakage. Leakage shall be cause for rejection (soap during testing period). Fuzz is not considered a failure. After 5 minutes, there shall be no evidence of distortion or damage to the seams.

Inflation Test: Lower Chamber to 3.00 psi , re-adjust after 45 minutes. After 1 hour, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period. The corrected pressure reading shall not be less than 2.94PSI in order for the Test to be acceptable.

- 0.054 PSI for each  $1^{\circ}\text{C}$  of temperature increase
- + 0.054 PSI for each  $1^{\circ}\text{C}$  of temperature decrease
- + 0.049 PSI for each 0.1 inch of barometric increase
- 0.049 PSI for each 0.1 inch of barometric decrease

Chambers	Pressure	5 Min. Over P. & Soap Test	45 Minute Stabilizing Period			1 Hour Test											
			Pass / Fail	Design Pressure	Time On	Time Off	Design Pressure	Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g	Pass / Fail		
Dec 10/04	4.36 PSI	Pass		3.00 PSI	10:30	11:15	3.00 PSI	11:20	12:20	2.99 PSI	23°	23°	29.72	29.70	-0.009	2.98 PSI	Pass
# 1 (see note 1)	4.36 PSI																
Re-Test																	
Dec 11/04 (# 2 main Seam)	4.36 PSI	Pass		3.00 PSI	8:15	9:00	3.00 PSI	9:00	10:00	2.98 PSI	23°	23°	29.83	29.89	+0.029	3.00 PSI	Pass
Re-Test																	

Note 1: Chamber # 1 requires Dart Aerospace Approval Signature: Chris Prevarn Date: 09.12.10

Observations: OK

TUEMAR

# 12

## Product Inspection Form # 193-8927(Tube &amp; Final)

Rev. D Sheet 3/3

**Final Test:** Leakage / Relief Valves: The chambers are to be tested separately (one at a time). Through the Topping Up Valve, inflate chamber to approximately 2.00 PSI, soap the (3) valves to detect leakage. Then slowly inflate chamber until pressure relief valve vents. Use leak detector or non detergent soap to detect the opening and the closing. A hissing sound may also denote that the valve has started to open. Record the opening/closing time and pressure. The opening pressure shall be between 3.3 – 3.5 PSI and the closing pressure shall not be less than 3.00 PSI, in order for the test to be acceptable. After 24 hours, take the pressure reading of the chamber. Compensate the pressure reading by allowing for any temperature and barometric pressure changes during the test period (see sheet 2). The corrected pressure reading shall not be less than 1.60 PSI in order for the Test to be acceptable.

Upon completion of the Final Test, inflate both chambers equally to approx. 2.00 PSI and perform Dimensional Verification below. Perform additional inspection of the tapes and girt assembly.

Pressure Relief Valve Test	PRV Serial Numbers	Opening		Closing		Pass / Fail
		Time ON	Pressure	Time	Close	
Chamber # 1 <del>Dec 3/05</del>	33187	8:40	3.32 PSI	8:50	3.00 PSI	Pass
Chamber # 2 (Main Seam) Dec 5/04	33179	1:10	3.48 PSI	1:15	3.04 PSI	Pass

Chambers	Design (closing) Pressure as per above	24 Hour Leakage Test								Pass / Fail
		Time On	Time Off	Read'g	Temp. Start/End	Barom. Start/End	Adjust.	Final Read'g		
# 1	3.00 PSI	8:50	8:50	2.59 PSI	24°	24°	30.09	30.10	- 0.004	2.60 PSI Pass
Re-Test										
# 2 (Main Seam)	3.04 PSI	1:15	1:15	2.76 PSI	23°	23°	29.94	29.40	- 0.364	2.49 PSI Pass
Re-Test										

Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail	Dim.	Tol.	Actual Dim.	Pass/Fail
3.5	± 0.100 *	3.7/16	Pass	47.0	± 0.5	47	Pass	24.75	± 0.5	25 1/4	Pass
7.3	± 0.100 *	7.3	Pass					31.0	± 0.5	31 1/4	Pass

\* = IAW QSI 018, rev. A dated 03-05-29

## Submission of Adhesive Testing:

		Subm.Date / am-pm	Pass/Fail						
Peel	24 hour	Dec 6/04	Pass	Dec 7/04	Pass	Dec 21/04	Pass		
	7 day	Dec 6/04	Pass	Dec 7/04	Pass	Dec 21/04	Pass		
Shear	24 hour	Dec 6/04	Pass	Dec 7/04	Pass	Dec 21/04	Pass		
	7 day	Dec 6/04	Pass	Dec 7/04	Pass	Dec 21/04	Pass		